The recent decades have witnessed the rise of non-Hermitian physics [1]. Literally, this is a field studying physical systems or processes described by non-Hermitian matrices or operators. It is relevant to a broad class of open systems, either quantum or classical. Essential progress has been made in defining, discovering, and classifying non-Hermitian topological phases [2-4], which are the dissipative generalizations of conventional topological materials described by Hermitian Hamiltonians. Meanwhile, exploring the physics of quantum emitters in structured bath has become a central topic in (quantum) nanophotonics [5]. This topic is not only of fundamental importance in understanding how light-matter interactions can be influenced by the photonic environment, but also of increasing practical relevance in light of the rapid development on engineering various nanophotonic structures. In this talk, I will first give a minimal tutorial on non-Hermitian physics with a special focus on topological phases. Then I will talk about how we merge the two fields by investigating the behaviors of quantum emitters in lossy nanophotonic structures with unique non-Hermitian features [6,7].

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